

January 30, 1997



Ms. Wanda Martinez  
USEPA Region III  
RCRA General Operations Branch, 3HW90  
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Reference: Phase I RFI Report  
University of Maryland at College Park  
College Park, Maryland  
BH No. 70941

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Dear Ms. Martinez:

Enclosed for your review and approval are three (3) copies of the above referenced report submitted on behalf of the University of Maryland at College Park. The report has been completed in compliance with USEPA Permit No. MDD 980-829-873 for corrective action under RCRA as amended by HSWA of 1984.

because of the bulk of data, only one copy of the laboratory QA/QC procedures and methodologies have been included with this submittal. If requested, additional copies can be produced and forwarded to you.

If you have any questions, or need additional information, please contact the undersigned at 717-852-1494 or Mr. John Coffey, P.E., Project Manager, University of Maryland at College Park at 301-405-3462.

Very truly yours,

**BUCHART-HORN, INC.**

**BUCHART-HORN, INC.**

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RDD/llb  
Enclosures

cc: John Coffey, University of Maryland

L:\PROJ\70941\REPORTS\RFI.WPD

**PHASE I RFI**

**IN COMPLIANCE WITH  
USEPA PERMIT NO. MDD 980-829-873  
FOR CORRECTIVE ACTION UNDER  
RCRA AS AMENDED BY HSWA OF 1984**

**FOR**

**UNIVERSITY OF MARYLAND AT COLLEGE PARK  
COLLEGE PARK, MARYLAND**

**PREPARED BY:**

**BUCHART-HORN, INC.  
CONSULTING ENGINEERS AND PLANNERS  
445 WEST PHILADELPHIA STREET  
YORK, PENNSYLVANIA 17404**

**SUBMITTED TO:**

**RCRA GENERAL OPERATIONS BRANCH 3HW90  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
841 CHESTNUT BUILDING  
PHILADELPHIA, PENNSYLVANIA 19107-4431**

**JANUARY 1997**

PHASE I RFI  
UNIVERSITY OF MARYLAND AT COLLEGE PARK

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## 1.0 INTRODUCTION

The University of Maryland at College Park (UMCP) is a research and development and educational facility operating on approximately 1,300 acres of land in College Park, Maryland (See Figure 1). UMCP was issued a RCRA Permit for Corrective Action by the United States Environmental Protection Agency (USEPA) (Permit No. MDD-980-829-873). The permit required UMCP to complete various actions including completion of a Verification Investigation (VI) as specified under Part II.C of the Permit for Corrective Action. The objective of the VI was to investigate suspected releases of hazardous constituents at three Solid Waste Management Units (SWMU's) and two Areas of Concern (AOC's). They included the Diesel Fuel Tank (AOC-C); Retention Pond 3 (AOC-H); Retention Ponds 1 and 2 (SWMU 45 and 46); and, the Explosive Waste Disposal Area (SWMU 43).

A VI was subsequently completed by the University and a VI Report issued to the USEPA in October 1993. In March 1994, the University received USEPA's comments on the report, which required additional work to be completed at SWMUs 45 and 46 and AOCs C and H. USEPA approved the University's recommendation of no further action at SWMU 43, Waste Disposal Area. Based on subsequent discussions and meetings with the University, the USEPA required the University to complete a Phase I RFI at the above referenced SWMUs and AOCs.

This Report describes the field investigation and summarizes the analytical results obtained during the Phase I RFI. Only Retention Ponds 1, 2, and 3 (SWMU 45, SWMU 46, and AOC-H, respectively) are addressed in this Report. The investigation involving the Diesel Fuel Tank (AOC-C) was completed by a different contractor under separate contract with the University. A report for this AOC will be submitted under separate cover.

## 2.0 LOCATION AND DESCRIPTION

The University of Maryland, College Park Campus is located inside the Capital Beltway in Prince Georges County in College Park, Maryland. The campus occupies approximately 1,300 acres and is situated approximately 9 miles northeast of downtown Washington, D.C. Figure 1 shows the location of the College Park Campus and surrounding areas. The surrounding land use primarily includes residential property on the north, south and west property lines. The area east of the College Park Campus has been developed for light industrial/commercial business and residential uses.

The SWMUs and AOCs are located in different parts of the UMCP property. Figure 2 shows their general locations.

Retention Ponds 1 and 2 are located on the southern edge of the Metzerott Road Landfill (SWMU 12) in the northwestern section of the Campus (See Figure 2). These ponds are unlined and are located downslope from the landfill area. The two units are approximately 35 feet wide and 40 feet long and appear to be used to collect surface runoff from the Landfill.

Retention Pond 3 is located in a pasture south of the Grounds Maintenance Services Facility in the northcentral section of the Campus (See Figure 2). The pond dimensions are estimated to be 30' x 50'. The pond is located inside an approximate 50' x 100' fenced area. The pond was apparently constructed primarily as a sediment control structure to intercept runoff and/or to contain overflow from the Grounds Maintenance Services area located on higher ground to its immediate north. The pond is between the Grounds Maintenance Services area and an unnamed tributary to Paint Branch Creek. It is not known whether the pond water is from surface runoff, direct rainfall or groundwater discharge.

### **3.0 BACKGROUND**

In September 1991, the USEPA issued a Permit for Correct Action No. MDD 980-829-873. This permit required the Permittee to conduct a Verification Investigation (VI) for suspected releases of hazardous constituents and, if necessary, a RCRA Facility Investigation (RFI) at specified SWMUs and AOCs.

A VI was subsequently completed by UMCP in October 1993. The VI involved obtaining and analyzing soil samples collected from the Diesel Fuel Tank (AOC-C); Retention Pond 3 (AOC-H); Retention Ponds 1 and 2 (SWMUs 45 and 46); and, the Explosive Waste Disposal Area (SWMU 43). Practical Quantitative Limits, established by the USEPA in order to determine if additional investigation/remedial work would be required for each site, were exceeded at all sites except the Explosive Waste Disposal Area.

The USEPA subsequently agreed that no further action would be required at the Explosive Waste Disposal Area. However, in order to further define the levels and extent of potential contamination at the four remaining sites, the USEPA required the completion of a Phase I RFI.

A Phase I RFI Work Plan was prepared and submitted to the USEPA in May 1995. Significant comments issued by the USEPA upon their review of the Work Plan included the requirement to obtain an additional sample at Retention Pond 3 and the USEPA would use Risk-Based Numbers, Soil Ingestion-Residential, to determine if corrective measures would be necessary at the completion of the RFI. Final approval of the Work Plan was issued by the USEPA in September 1996.

## 4.0 FIELD INVESTIGATION

### 4.1 General

The field investigation was completed between November 20 and 21, 1996. Each of the areas investigated are described separately below. All field work was completed at Health and Safety Level D. Photographs of the sites are presented in Appendix A.

All samples were collected by BH personnel. Each sampler wore disposable, sterile, latex gloves when obtaining samples. Sample bottles were provided by NEI/GTEL Laboratories, Inc. Milford, New Hampshire (NEI/GTEL). Samples to be analyzed for volatile organics were placed into the sample bottles so that no head space remained in the bottle. The bottles were placed into sample shuttles and packed with ice for shipment to NEI/GTEL for analysis. Chain-of-Custody documentation was initiated at the laboratory and was subsequently completed by the sampler.

### 4.2 Retention Ponds 1 and 2

Two additional sediment samples were collected at each pond for laboratory analysis. Sampling locations are shown on Figure 4. These samples included RP1-4 and RP1-5 at Pond 1 and RP2-4 and RPI-5 at Pond 2. Each of the four samples was collected using a similar procedure as used during the VI. This procedure included placing a plastic sheet over the end of a 4-inch diameter PVC pipe then pushing the pipe approximately 6 inches to 1 foot into the bottom of the pond. A precleaned stainless steel sampler was then inserted into the PVC pipe and driven into the pond sediment. The sample was then retrieved in the sampler. This method eliminated the potential for contact between the sample and the pond water. The sampler was decontaminated before each sample was obtained by washing it with Labtone soap and then thoroughly rinsing the equipment with deionized water.

Quality Assurance/Quality Control (QA/QC) samples collected included one travel blank, one field blank, and one duplicate (RP1-Duplicate) sample. The field blank was collected by pouring deionized water through the stainless steel sampler and collecting the run-off into the appropriate bottles. RP1-Duplicate was collected at the same location where RP1-4 was collected.

Each sample, excluding the field blank sample, was analyzed for TC Metals, TCL volatiles, semivolatiles, and pesticides/PCB's. Specific constituents for each of these parameters were included in the Phase I RFI Work Plan and are included in Appendix B. Laboratory results are discussed in Section 5.0; a summary of the results is included in Appendix C.

The field blank sample was analyzed for volatiles, semivolatiles, pesticides, PCG's and metals. Due to a laboratory error, the field blank analysis did not include mercury or herbicides. However all samples associated with this blank were not detected (above reporting limits) for either mercury or herbicides. The travel blank was analyzed for volatile organics only.

The sediments collected at the ponds consisted of black-gray silt to silty clay, organic odor.

#### **4.3 Retention Pond 3**

Four samples were collected from Retention Pond 3. The samples included:

|                 |  |
|-----------------|--|
| RP3-4           | Collected on the upslope side of the pond at the edge of the water.    |
| RP3-5 and RP3-7 | Collected at the bottom of the pond.                                   |
| RP3-6           | Collected along the outfall side of the pond at the edge of the water. |

Sample locations are shown on Figure 3.

The samples collected along the banks of the pond were collected using a precleaned stainless steel spatula. The top inch of sediment was scraped away prior to collecting the sample. The samples collected at the bottom of the pond were obtained using the same procedure used at Retention Ponds 1 and 2.

Each sample was analyzed for TC Metals, TCL Pesticides/PCB's and Herbicides. Specific constituents for each of these parameters were included in the Phase I RFI Work Plan and are included in Appendix B. Laboratory results are discussed in Section 5.0, a summary of the results is included in Appendix C.

The depth of water in the pond at the time of sampling was measured at 4 feet. Samples RP3-5 and 7 were characterized as black to brown sandy silt, organic odor. RP3-4 and 6 consisted of orange-brown, gravelly silt, no odor.



## 5.0 SAMPLING RESULTS

### 5.1 General

All samples were collected by BH personnel as discussed in Section 4.0. Sample analysis was performed by NEI/GTEL Environmental Laboratories, Inc., Milford, New Hampshire (NEI/GTEL). Results were subsequently forwarded to BH for reporting. For clarity purposes, the results for each SWMU/AOC are discussed separately below.

As required by the USEPA, samples were analyzed for specific constituents as previously presented in the Phase I RFI Work Plan. The list of the constituents is also presented in Appendix B. The specific list for each SWMU/AOC is as follows:

|                           |   |
|---------------------------|---|
| Retention Ponds 1 and 2 - | TC Metals, TCL Volatiles, Semivolatiles, Pesticides/PCB's |
| Retention Pond 3 -        | TC Metals, Pesticides/PCB's, Herbicides                   |

As agreed to with the USEPA, Endothall was not analyzed because no method is currently available to analyze this compound in soil.

Technical chlordane was reported in lieu of alpha and gamma chlordane. Either isomer would have been detected and reported as technical chlordane if present.

The endrin breakdown product, Endrin Ketone, was not reported. Endrin Ketone is not an 8080A parameter, nor is it listed in the Region III Soil Ingestion Cleanup Criteria analyte list.

2,2' - oxybis (1-chloropropane) was reported as bis (2-chloroisopropyl) ether.

Due to a laboratory oversight, the herbicide diallate was not analyzed in the samples collected from Retention Pond 3. NEI/GTEL's correspondence regarding this compound has been included in Appendix D for USEPA's review.

Laboratory results have been summarized on Table 1. This table lists only those constituents that exceeded the Reporting Limit as established by the laboratory.

## 5.2 Retention Ponds 1 and 2

Three sediment samples (RP1-4, RP1-5, and RP1-Duplicate) were obtained at Retention Pond 1. RP1-Duplicate was collected at the same location as RP1-4. An additional two sediment samples (RP2-4 and RP2-5) were obtained at Retention Pond 2. Each sample was collected approximately one foot below the bottom of the pond.

Acetone was detected (above reporting limits) in each of the five samples at values ranging from .032 to .062 mg/kg. These values however are significantly below the USEPA Risk-Based Concentration Level (Residential) of 7800 mg/kg.

Arsenic, barium, chromium, and lead were also detected in each of the five samples. However, as shown on Table 1, the detected values of all metals, excluding lead, are below USEPA Residential Concentrations. Lead has not been assigned a USEPA Region III Risk-Based Concentration Level. USEPA Region IX has developed Preliminary Remediation Goals (PRG's) that reflect current USEPA toxicological and risk assessment information. The PRG for lead (residential) is 400 mg/kg. The lead levels encountered range from 13 to 42 mg/kg which are significantly lower than the PRG.

Aroclor 1260, a polychlorinated biphenyl (PCB), was detected above reporting limits in samples RP1-4, RP1-Duplicate, RP1-5, and RP2-4 at levels of .084, .038, .068, and 0.19 mg/kg, respectively. The concentrations noted for RP1-4 and RP2-4 exceed the USEPA Residential Concentration Limit of .083 mg/kg.

Constituents exceeding reporting limits were not detected in either the field blank or the travel blank sample.

## 5.3 Retention Pond 3

Four sediment samples (RP3-4, RP3-5, RP3-6 and RP3-7) were obtained at Retention Pond 3. Samples RP3-4 and RP3-6 were collected along the bank of the pond; Samples RP3-5 and RP3-7 were collected approximately one foot below the bottom of the pond.

Arsenic was detected above reporting limits in Samples RP3-4, RP3-5, and RP3-7. Samples RP3-5 and RP3-7 contained levels of barium and lead above reporting limits. Chromium, above reporting limits, was detected in all four samples. As shown on Table 1, all of the detected metal values, excluding lead, are below USEPA Residential Concentration Limits. As discussed in Section 5.2,

lead has not been assigned at Residential Concentration Level, however, the values of lead encountered (8.9 and 25 mg/kg) are significantly below the PRG of 400 mg/kg.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on the field investigation and subsequent sample analysis and evaluation as presented in the Phase I RFI Report. For clarity, each SWMU/AOC is discussed separately.

### Retention Ponds 1 and 2

The polychlorinated biphenyl (PCB) Aroclor 1260 was the only parameter analyzed at Ponds 1 and 2 that exceeded the laboratory reporting limit and the USEPA Risk-Based Concentration Level for Residential Soil Ingestion. All other parameters analyzed were either below this level or were not detected. The Aroclor levels detected, .084 mg/kg in RP1-4 and 0.19 mg/kg in RP2-4, narrowly exceed the Concentration Level for PCB's of .083 mg/kg.

If compared to USEPA's final PCB spill cleanup policy (Federal Register 10688, April 1987), the results do not exceed the 1 mg/kg or less PCB limit for soil that can be used as back-fill for a PCB spill excavation. Considering that the pond sediment in the area of RP1-4 and RP2-4 could be used as "clean" backfill for a PCB spill excavation, no corrective action concerning the PCB concentrations is recommended.

### Retention Pond 3

Several metals were detected above the laboratory reporting limit, however none exceeded the Risk-Based Concentration Level for Residential Soil Ingestion. All other parameters analyzed were not detected. Corrective action regarding this pond is therefore not recommended.

## **7.0 REFERENCES**

1. Verification Investigation Plan for University of Maryland at College Park, College Park, Maryland, Buchart-Horn, Inc., May 1992.
2. EPA Region III Risk-Based Concentration Table. Roy L. Smith, Ph.D. January 31, 1995.
3. Cleanup Criteria for Contaminated Soil and Groundwater. 1996 Edition, ASTM DS64. Anthony J. Buonicore.



**TABLE 1**  
**UNIVERSITY OF MARYLAND - PHASE I RFI**  
**ANALYTICAL RESULTS SUMMARY TABLE**

*BLACK-GRAY SILT TO SILTY CLAY*

*ORANGE, BROWN GRANULY SILT*

*SOIL SCREENING  
LEVELS FOR  
SUPERFUND  
(INJECTION)*

*7,800*

*1 (PCBS)*

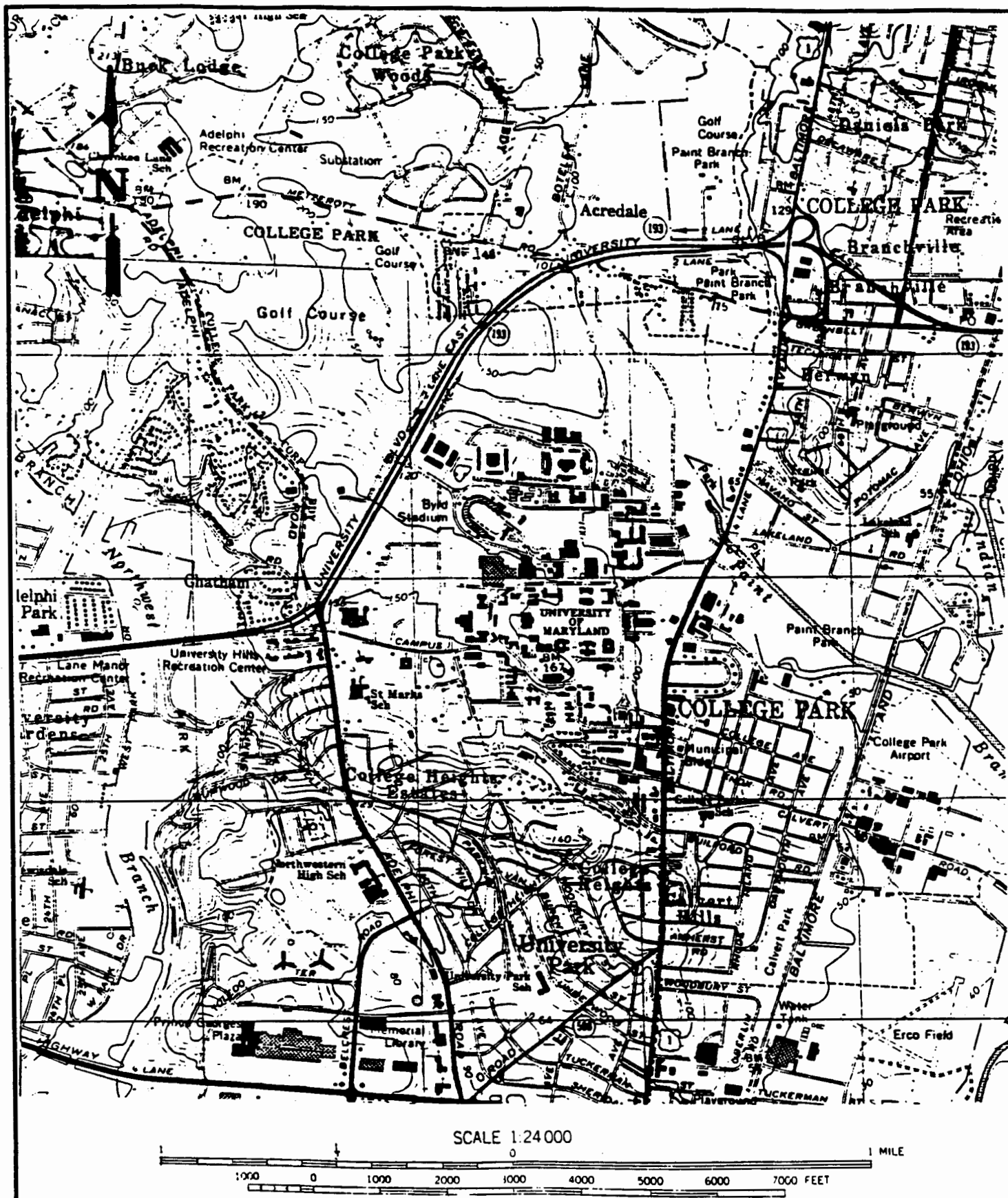
*0.4  
5,500  
390 (CR<sup>VI</sup>)  
400*

| LABORATORY ID NUMBER<br>SAMPLING ID NUMBER<br>DATE COLLECTED<br>MATRIX |                                   |         |  | M6110437-07<br>RP1-4<br>11/20/96<br>Soil        | M6110437-8<br>DUPLICATE<br>11/20/96<br>Soil | M6110437-9<br>RP1-5<br>11/21/96<br>Soil | M6110437-10<br>RP2-4<br>11/21/96<br>Soil | M6110437-11<br>RP2-5<br>11/21/96<br>Soil | M6110437-02<br>RP-3-4<br>11/20/96<br>Soil | M6110437-03<br>RP-3-5<br>11/20/96<br>Soil | M6110437-04<br>RP-3-6<br>11/20/96<br>Soil | M6110437-05<br>RP-3-7<br>11/20/96<br>Soil |
|--|-----------------------------------|---------|--|---|---|---|--|--|---|---|---|---|
| CAS NO.  | PARAMETER                         | UNITS   | EPA REGION III<br>RISK-BASED<br>CONCENTRATION<br>(Residential) | <i>same location</i><br><i>55% solids 51.9%</i> |   |   | <i>72.9% solids</i>                      |  | <i>EDGE<br/>OF<br/>WATER</i>              | <i>BOTTOM</i>                             | <i>OUTFALL</i>                            | <i>BOTTOM<br/>EDGE<br/>OF<br/>WATER</i>   |
|  | <b>Volatile Organic Compounds</b> |         |  |   |   |   |  |  |   |   |   |   |
| 67-64-1  | Acetone                           | (mg/kg) | 7800   | 0.059   | 0.053                                       | 0.062                                   | 0.052                                    | 0.032                                    |   |   |   |   |
|  | <b>Pesticides/PCB's</b>           |         |  |   |   |   |  |  |   |   |   |   |
|  | Arocolor 1260                     | (mg/kg) | 0.083  | 0.084   | 0.038                                       | 0.068                                   | 0.19                                     |  |   |   |   |   |
|  | <b>Metals</b>                     |         |  |   |   |   |  |  |   |   |   |   |
| 7440-38-2  | Arsenic                           | (mg/kg) | 23   | 8.3   | 7.1   | 4.9                                     | 4.7                                      | 2.9                                      | 3.2                                       | 3.5                                       |   | 7.6                                       |
| 7440-39-3  | Barium                            | (mg/kg) | 5500   | 93  | 95  | 83                                      | 78                                       | 90                                       |   | 27  |   | 55  |
| 7440-47-3  | Chromium                          | (mg/kg) | 390  | 63  | 59  | 42                                      | 54                                       | 23                                       | 12  | 18  | 3.5                                       | 66  |
| 7439-92-1  | Lead                              | (mg/kg) | ----   | 31  | 33  | 42                                      | 25                                       | 13                                       |   | 8.9                                       |   | 25  |

*~45% of LIQUIDS*







REFERENCE: U.S.G.S. 7.5 MIN. SERIES TOPOGRAPHIC MAP, WASHINGTON EAST, QUAD.  
 (PHOTO REVISED 1979); BELTSVILLE, MD. QUAD. (PHOTO REVISED 1979)

PRINT & STAT. INC.

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 DESIGN BY  
 DRAWN BY **REF**  
 CHECK BY  
 DATE **8/93**

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 AND INTENT OF WORK AND  
 IS PARTLY DIAGRAMMATIC

DRAWING SHALL NOT  
 BE SCALED

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 HORN, INC.  
 Consulting Engineers and Planners



# SITE LOCATION MAP UNIVERSITY OF MARYLAND PHASE I RFI

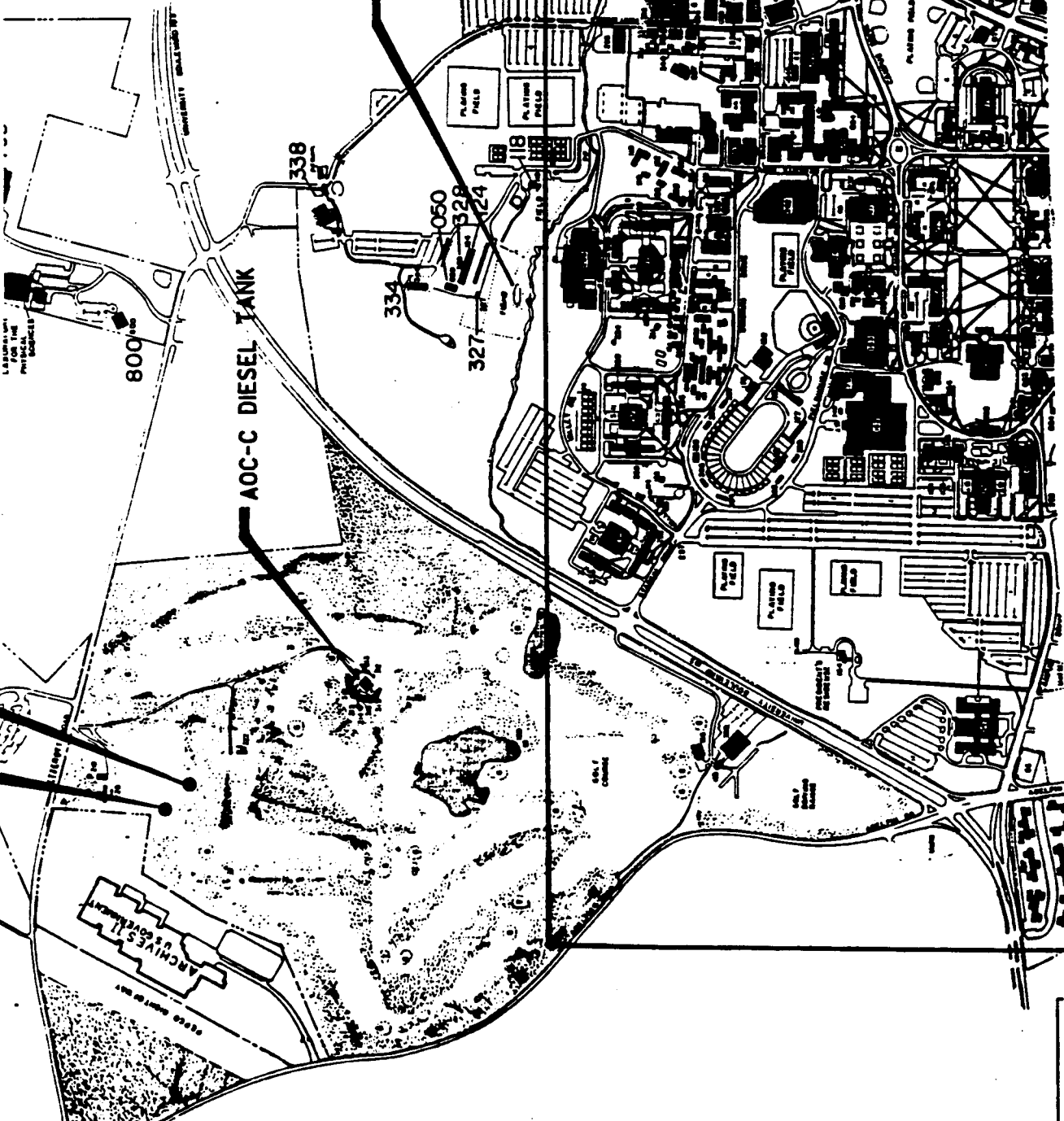
DRAWING NO  
**FIG. 1**  
 SHEET NO

PROJECT NO  
**70941**

SWMU 45 RETENTION POND 1  
SWMU 46 RETENTION POND 2

AOC-C DIESEL TANK

AOC-H RETENTION POND 3



REFERENCE: BUILDING INVENTORY MAP, ENGINEERING & ARCHITECTURAL SERVICES  
THE UNIVERSITY OF MARYLAND, JUNE 1990.

PRINT & STAT, INC.

ENGR-ARCH  
DESIGN  
BY  
DRAWN BY REF  
CHECK BY  
DATE 8/93

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Buchart Horn, Inc.

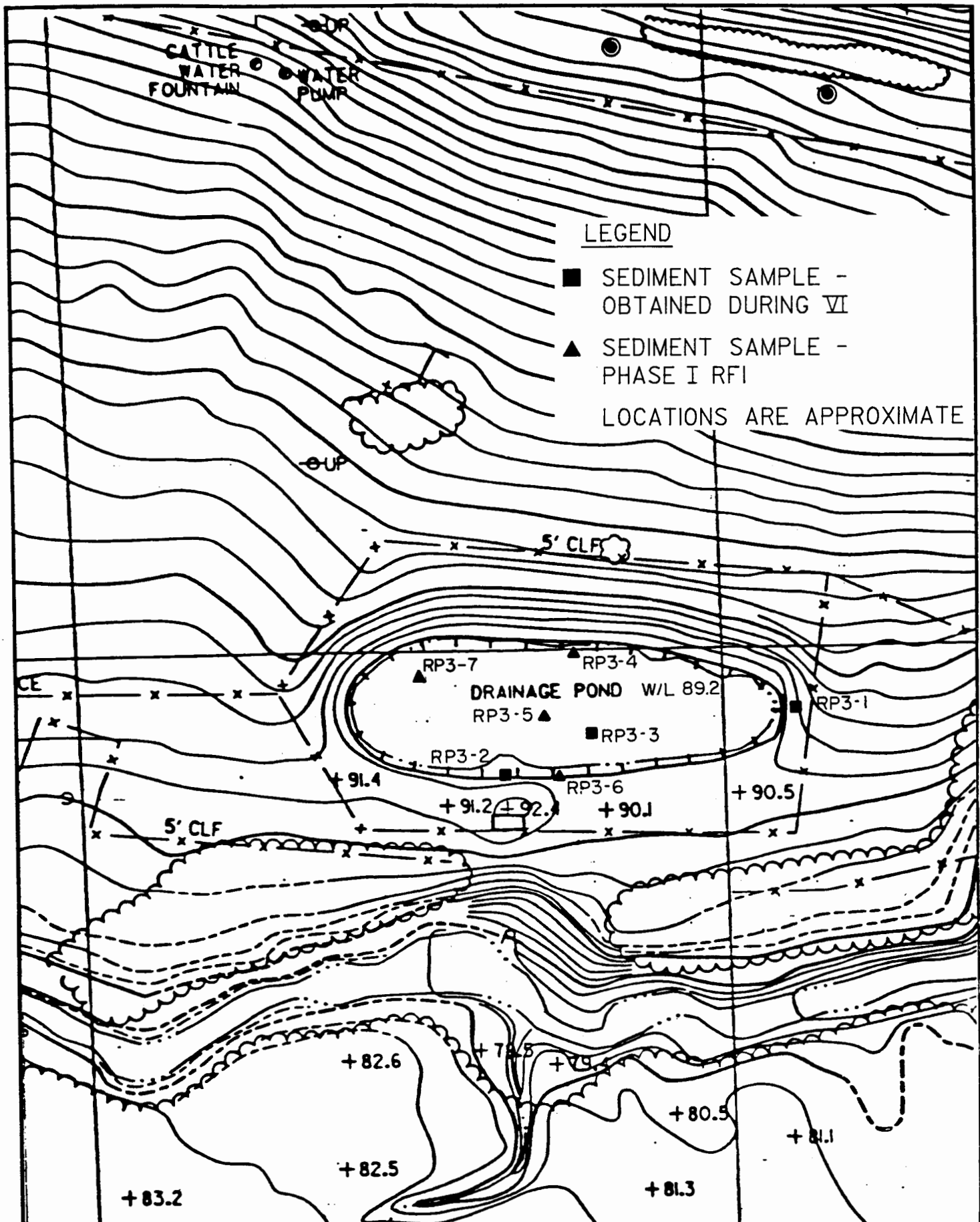


Consulting Engineers and Planners

SWMU/AOC LOCATION MAP  
UNIVERSITY OF MARYLAND  
PHASE I RFI

DRAWING NO  
FIG. 2  
SHEET NO

PROJECT NO  
70941



# LEGEND

■ SEDIMENT SAMPLE - OBTAINED DURING VI

▲ SEDIMENT SAMPLE - PHASE I RFI

LOCATIONS ARE APPROXIMATE

ENGR / ARCH.

DESIGN BY

DRAWN BY

CHECK BY

DATE 5/92



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## SAMPLING LOCATIONS RETENTION POND 3 UNIVERSITY OF MARYLAND PHASE I RFI

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DRAWING SHALL NOT BE SCALED

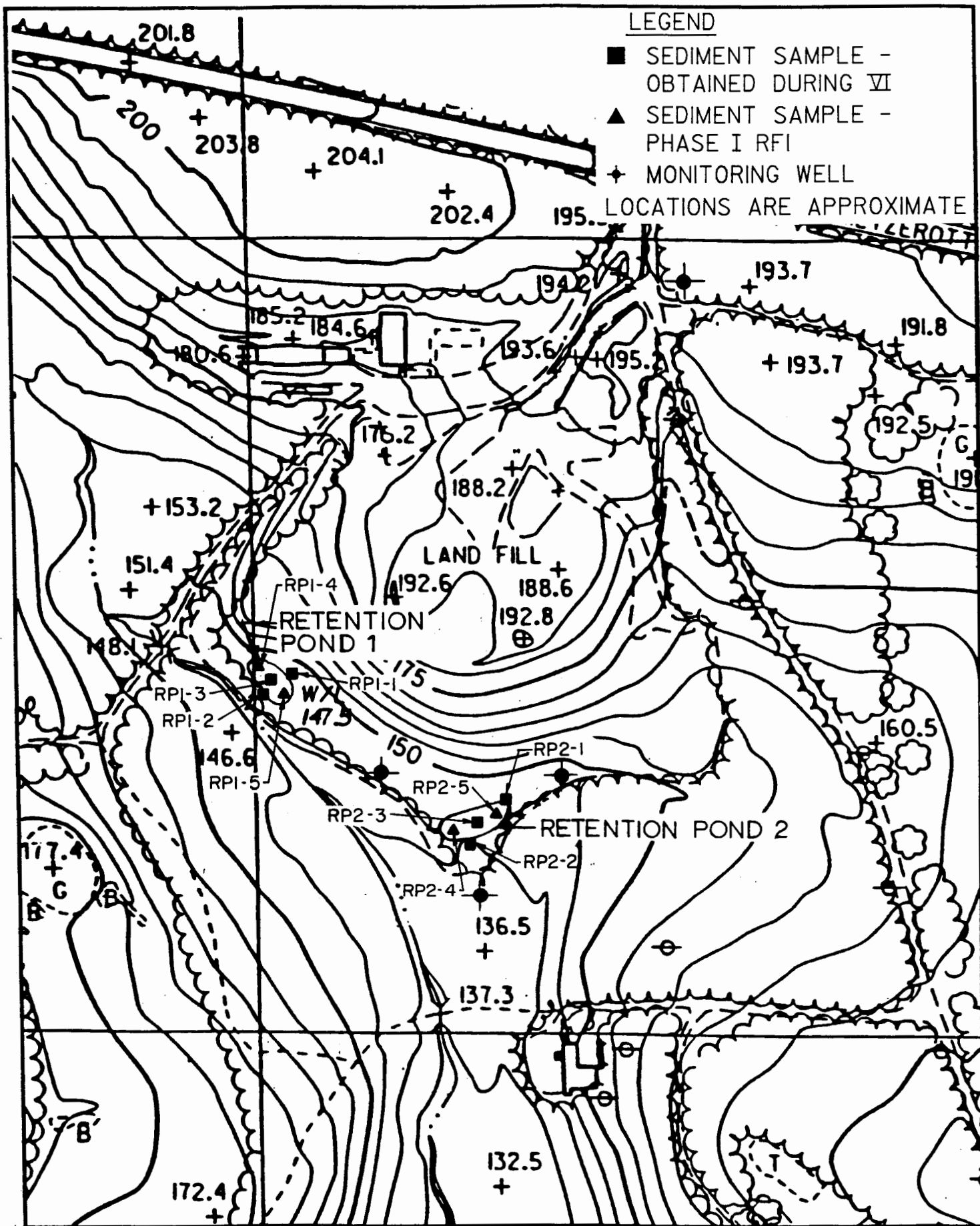
DRAWING NO

FIG. 3

SHEET NO

PROJECT NO

70941



ENGR/ARCH  
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 DRAWN BY **SM**  
 CHECK BY  
 DATE **5/92**

**BUCHART HORN, INC.**  
 Engineers, Architects and Planners

**SAMPLING LOCATIONS  
 RETENTION POND 1 & 2  
 UNIVERSITY OF MARYLAND  
 PHASE I RFI**

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 AND INTENT OF WORK  
 AND IS PARTLY  
 DIAGRAMMATIC.  
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DRAWING NO  
**FIG. 4**

SHEET NO

PROJECT NO  
**70941**



# APPENDIX A

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## SITE PHOTOGRAPHS



RETENTION POND 1



RETENTION POND 2

|             |  |  |             |
|-------------|--|--|-------------|
| ENGR./ARCH. | <br><b>BUCHART<br/>HORN, INC.</b><br>Engineers, Architects and Planners | SITE PHOTOGRAPHS<br>PHASE I RFI<br>UNIV. OF MARYLAND | DRAWING NO. |
| DESIGN BY   |  |  | SHEET NO.   |
| DRAWN BY    |  |  | PROJECT NO. |
| CHECK BY    |  |  | 70941       |
| DATE        |  |  |             |



RETENTION POND 3

ENGR./ARCH.

DESIGN  
BY

DRAWN  
BY

CHECK  
BY

DATE



Engineers, Architects and Planners

SITE PHOTOGRAPHS  
PHASE I RFI  
UNIV. OF MARYLAND

DRAWING NO.

SHEET NO.

PROJECT NO.

70941



## **APPENDIX B**

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### **SPECIFIC CONSTITUENTS FOR TC METALS, TCL VOLATILE ORGANICS, SEMIVOLATILES, PESTICIDES/PCBs, AND HERBICIDES**

## **TC METALS**

Arsenic  
Barium  
Cadmium  
Chromium

Lead  
Mercury  
Selenium  
Silver

## **HERBICIDES**

Diallate  
2,4 - Dichlorophenoxyacetic acid (syn. 2,4-D)  
Dinoseb (syn. DNBP)  
Endothall  
2,4,5 - Trichlorophenoxyacetic acid (syn. 2,4,5-T)  
2,4,5 - Trichlorophenoxypropionic acid (syn. 2,4,5 TP)

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: \_\_\_\_\_ Contract: \_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: \_\_\_\_\_

Sample wt/vol: \_\_\_\_\_ (g/mL) \_\_\_\_\_ Lab File ID: \_\_\_\_\_

Level: (low/med) \_\_\_\_\_ Date Received: \_\_\_\_\_

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: \_\_\_\_\_

GC Column: \_\_\_\_\_ ID: \_\_\_\_\_ (mm) Dilution Factor: \_\_\_\_\_

Soil Extract Volume: \_\_\_\_\_ (uL) Soil Aliquot Volume: \_\_\_\_\_ (uL)

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) \_\_\_\_\_ Q

|            |                                 |  |  |
|------------|---------------------------------|--|--|
| 74-87-3    | -----Chloromethane              |  |  |
| 74-83-9    | -----Bromomethane               |  |  |
| 75-01-4    | -----Vinyl Chloride             |  |  |
| 75-00-3    | -----Chloroethane               |  |  |
| 75-09-2    | -----Methylene Chloride         |  |  |
| 67-64-1    | -----Acetone                    |  |  |
| 75-15-0    | -----Carbon Disulfide           |  |  |
| 75-35-4    | -----1,1-Dichloroethene         |  |  |
| 75-34-3    | -----1,1-Dichloroethane         |  |  |
| 540-59-0   | -----1,2-Dichloroethene (total) |  |  |
| 67-66-3    | -----Chloroform                 |  |  |
| 107-06-2   | -----1,2-Dichloroethane         |  |  |
| 78-93-3    | -----2-Butanone                 |  |  |
| 71-55-6    | -----1,1,1-Trichloroethane      |  |  |
| 56-23-5    | -----Carbon Tetrachloride       |  |  |
| 75-27-4    | -----Bromodichloromethane       |  |  |
| 78-87-5    | -----1,2-Dichloropropane        |  |  |
| 10061-01-5 | -----cis-1,3-Dichloropropene    |  |  |
| 79-01-6    | -----Trichloroethene            |  |  |
| 124-48-1   | -----Dibromochloromethane       |  |  |
| 79-00-5    | -----1,1,2-Trichloroethane      |  |  |
| 71-43-2    | -----Benzene                    |  |  |
| 10061-02-6 | -----trans-1,3-Dichloropropene  |  |  |
| 75-25-2    | -----Bromoform                  |  |  |
| 108-10-1   | -----4-Methyl-2-Pentanone       |  |  |
| 591-78-6   | -----2-Hexanone                 |  |  |
| 127-18-4   | -----Tetrachloroethene          |  |  |
| 79-34-5    | -----1,1,2,2-Tetrachloroethane  |  |  |
| 108-88-3   | -----Toluene                    |  |  |
| 108-90-7   | -----Chlorobenzene              |  |  |
| 100-41-4   | -----Ethylbenzene               |  |  |
| 100-42-5   | -----Styrene                    |  |  |
| 1330-20-7  | -----Xylene (total)             |  |  |

1B  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: \_\_\_\_\_ Contract: \_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: \_\_\_\_\_

Sample wt/vol: \_\_\_\_\_ (g/mL) \_\_\_\_\_ Lab File ID: \_\_\_\_\_

Level: (low/med) \_\_\_\_\_ Date Received: \_\_\_\_\_

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: \_\_\_\_\_

Concentrated Extract Volume: \_\_\_\_\_ (uL) Date Analyzed: \_\_\_\_\_

Injection Volume: \_\_\_\_\_ (uL) Dilution Factor: \_\_\_\_\_

GPC Cleanup: (Y/N) \_\_\_\_\_ pH: \_\_\_\_\_

CONCENTRATION UNITS:  
(ug/L or ug/Kg) \_\_\_\_\_ Q

| CAS NO.  | COMPOUND                     | CONCENTRATION UNITS:<br>(ug/L or ug/Kg) | Q |
|----------|------------------------------|---|---|
| 108-95-2 | Phenol                       |   |   |
| 111-44-4 | bis(2-Chloroethyl) ether     |   |   |
| 95-57-8  | 2-Chlorophenol               |   |   |
| 541-73-1 | 1,3-Dichlorobenzene          |   |   |
| 106-46-7 | 1,4-Dichlorobenzene          |   |   |
| 95-50-1  | 1,2-Dichlorobenzene          |   |   |
| 95-48-7  | 2-Methylphenol               |   |   |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) |   |   |
| 106-44-5 | 4-Methylphenol               |   |   |
| 621-64-7 | N-Nitroso-di-n-propylamine   |   |   |
| 67-72-1  | Hexachloroethane             |   |   |
| 98-95-3  | Nitrobenzene                 |   |   |
| 78-59-1  | Isophorone                   |   |   |
| 88-75-5  | 2-Nitrophenol                |   |   |
| 105-67-9 | 2,4-Dimethylphenol           |   |   |
| 111-91-1 | bis(2-Chloroethoxy) methane  |   |   |
| 120-83-2 | 2,4-Dichlorophenol           |   |   |
| 120-82-1 | 1,2,4-Trichlorobenzene       |   |   |
| 91-20-3  | Naphthalene                  |   |   |
| 106-47-8 | 4-Chloroaniline              |   |   |
| 87-68-3  | Hexachlorobutadiene          |   |   |
| 59-50-7  | 4-Chloro-3-methylphenol      |   |   |
| 91-57-6  | 2-Methylnaphthalene          |   |   |
| 77-47-4  | Hexachlorocyclopentadiene    |   |   |
| 88-06-2  | 2,4,6-Trichlorophenol        |   |   |
| 95-95-4  | 2,4,5-Trichlorophenol        |   |   |
| 91-58-7  | 2-Chloronaphthalene          |   |   |
| 88-74-4  | 2-Nitroaniline               |   |   |
| 131-11-3 | Dimethylphthalate            |   |   |
| 208-96-8 | Acenaphthylene               |   |   |
| 606-20-2 | 2,6-Dinitrotoluene           |   |   |
| 99-09-2  | 3-Nitroaniline               |   |   |
| 83-32-9  | Acenaphthene                 |   |   |

1C  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: \_\_\_\_\_ Contract: \_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: \_\_\_\_\_

Sample wt/vol: \_\_\_\_\_ (g/mL) \_\_\_\_\_ Lab File ID: \_\_\_\_\_

Level: (low/med) \_\_\_\_\_ Date Received: \_\_\_\_\_

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Extracted: \_\_\_\_\_

Concentrated Extract Volume: \_\_\_\_\_ (uL) Date Analyzed: \_\_\_\_\_

Injection Volume: \_\_\_\_\_ (uL) Dilution Factor: \_\_\_\_\_

GPC Cleanup: (Y/N) \_\_\_\_\_ pH: \_\_\_\_\_

CAS NO.                      COMPOUND                      CONCENTRATION UNITS:  
(ug/L or ug/Kg) \_\_\_\_\_                      Q

|                |                            |  |  |
|----------------|----------------------------|--|--|
| 51-28-5-----   | 2,4-Dinitrophenol          |  |  |
| 100-02-7-----  | 4-Nitrophenol              |  |  |
| 132-64-9-----  | Dibenzofuran               |  |  |
| 121-14-2-----  | 2,4-Dinitrotoluene         |  |  |
| 84-66-2-----   | Diethylphthalate           |  |  |
| 7005-72-3----- | 4-Chlorophenyl-phenylether |  |  |
| 86-73-7-----   | Fluorene                   |  |  |
| 100-01-6-----  | 4-Nitroaniline             |  |  |
| 534-52-1-----  | 4,6-Dinitro-2-methylphenol |  |  |
| 86-30-6-----   | N-Nitrosodiphenylamine (1) |  |  |
| 101-55-3-----  | 4-Bromophenyl-phenylether  |  |  |
| 118-74-1-----  | Hexachlorobenzene          |  |  |
| 87-86-5-----   | Pentachlorophenol          |  |  |
| 85-01-8-----   | Phenanthrene               |  |  |
| 120-12-7-----  | Anthracene                 |  |  |
| 86-74-8-----   | Carbazole                  |  |  |
| 84-74-2-----   | Di-n-butylphthalate        |  |  |
| 206-44-0-----  | Fluoranthene               |  |  |
| 129-00-0-----  | Pyrene                     |  |  |
| 85-68-7-----   | Butylbenzylphthalate       |  |  |
| 91-94-1-----   | 3,3'-Dichlorobenzidine     |  |  |
| 56-55-3-----   | Benzo(a)anthracene         |  |  |
| 218-01-9-----  | Chrysene                   |  |  |
| 117-81-7-----  | bis(2-Ethylhexyl)phthalate |  |  |
| 117-84-0-----  | Di-n-octylphthalate        |  |  |
| 205-99-2-----  | Benzo(b)fluoranthene       |  |  |
| 207-08-9-----  | Benzo(k)fluoranthene       |  |  |
| 50-32-8-----   | Benzo(a)pyrene             |  |  |
| 193-39-5-----  | Indeno(1,2,3-cd)pyrene     |  |  |
| 53-70-3-----   | Dibenz(a,h)anthracene      |  |  |
| 191-24-2-----  | Benzo(g,h,i)perylene       |  |  |

(1) - Cannot be separated from Diphenylamine

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: \_\_\_\_\_ Contract: \_\_\_\_\_

Lab Code: \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: \_\_\_\_\_

Sample wt/vol: \_\_\_\_\_ (g/mL) \_\_\_\_\_ Lab File ID: \_\_\_\_\_

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_ Date Received: \_\_\_\_\_

Extraction: (SepF/Cont/Sonc) \_\_\_\_\_ Date Extracted: \_\_\_\_\_

Concentrated Extract Volume: \_\_\_\_\_ (uL) Date Analyzed: \_\_\_\_\_

Injection Volume: \_\_\_\_\_ (uL) Dilution Factor: \_\_\_\_\_

GPC Cleanup: (Y/N) \_\_\_\_\_ pH: \_\_\_\_\_ Sulfur Cleanup: (Y/N) \_\_\_\_\_

CONCENTRATION UNITS:  
(ug/L or ug/Kg) \_\_\_\_\_ Q

CAS NO.                      COMPOUND

|            |                     |  |  |
|------------|---------------------|--|--|
| 319-84-6   | alpha-BHC           |  |  |
| 319-85-7   | beta-BHC            |  |  |
| 319-86-8   | delta-BHC           |  |  |
| 58-89-9    | gamma-BHC (Lindane) |  |  |
| 76-44-8    | Heptachlor          |  |  |
| 309-00-2   | Aldrin              |  |  |
| 1024-57-3  | Heptachlor epoxide  |  |  |
| 959-98-8   | Endosulfan I        |  |  |
| 60-57-1    | Dieldrin            |  |  |
| 72-55-9    | 4,4'-DDE            |  |  |
| 72-20-8    | Endrin              |  |  |
| 33213-65-9 | Endosulfan II       |  |  |
| 72-54-8    | 4,4'-DDD            |  |  |
| 1031-07-8  | Endosulfan sulfate  |  |  |
| 50-29-3    | 4,4'-DDT            |  |  |
| 72-43-5    | Methoxychlor        |  |  |
| 53494-70-5 | Endrin ketone       |  |  |
| 7421-36-3  | Endrin aldehyde     |  |  |
| 5103-71-9  | alpha-Chlordane     |  |  |
| 5103-74-2  | gamma-Chlordane     |  |  |
| 8001-35-2  | Toxaphene           |  |  |
| 12674-11-2 | Aroclor-1016        |  |  |
| 11104-28-2 | Aroclor-1221        |  |  |
| 11141-16-5 | Aroclor-1232        |  |  |
| 53469-21-9 | Aroclor-1242        |  |  |
| 12672-29-6 | Aroclor-1248        |  |  |
| 11097-69-1 | Aroclor-1254        |  |  |
| 11096-82-5 | Aroclor-1260        |  |  |